



Dryden Flight Research Center
Edwards, California

DCP-S-031
Revision: Baseline

Dryden Centerwide Procedure

CODE SH

FACILITY OPERATIONAL READINESS REVIEW (ORR)

Electronically Approved by:
Associate Director

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1. PURPOSE

This instruction sets forth policy and procedures to establish and perform Operational Readiness Reviews (ORR), and their implementing Committees.

2. SCOPE

This instruction applies to: reviews of facility construction; facility modification; industrial operations; and ground based projects, which have significant inherent risks to life, the NASA mission, property, and the environment. This instruction does not apply to:

- A. Aircraft projects nor experimental facilities and systems which are aircraft critical. These are addressed under the DCP-X-020.

3. AUTHORITY

The Operational Readiness Review Committee is appointed by the Center Director, or representative, whenever the performance of such Committee is determined necessary to review, assess, and report to the Center Director, or representative, the safety, design, planning, and functional adequacy of a DFRC program or operation. The charter and membership of this committee can be found in the Dryden Organizational Manual (DOM). The criteria for appointing the Committees will normally be:

- A. Significant new programs or operations
- B. Critical configuration changes or major modifications
- C. Proof-of-concept demonstrations or tests
- D. Hazardous or critical activities
- E. Use of specialized equipment or facilities
- F. Significant installation of safety critical systems, e.g., detection, alarms, hazard suppression or control
- G. Significant new personnel occupancies

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4. DESCRIPTION

An Operational Readiness Review (ORR) is a process performed by a committee to assure that a facility, or a major modification to a previously approved facility, can be operated safely within intended operational requirements. The facility must meet Occupational Safety and Health Agency (OSHA) guidelines, National Aeronautics and Space Administration (NASA) requirements, Environmental Protection Agency (EPA) requirements, and mission assurance goals.

The intent of an ORR is to ensure initial and continued safe and effective operation of a facility that has a significant degree of risk of accident or improper operation that might cause personnel injury or death or serious damage to equipment, buildings, or adjoining areas. The ORR precedes the occupancy or operation at a time when credible review and assessment can be made without delaying the operational schedule.

5. COMMITTEE FUNCTIONS

The functions of the Committee shall include, but not be limited to, the following as appropriate for the type of review being conducted:

- A. Conduct an independent review and assessment of the total program or operation and assure that adequate and proper planning and preparation is accomplished to result in meeting required objectives under acceptable safety conditions. A major goal is the development of current and correct operating instructions effective configuration control, and positive safety and quality procedures.
- B. Provide engineering and technical recommendations to concerned personnel, while recognizing that it is not a function of the Committee to request or direct the actual work effort.
- C. Maintain effective communication among Committee members, program/operation personnel, and the Center Director or his representative.
- D. Submit a formal report of Committee activity, findings, and recommendations to the Center Director or his representative, with three (3~) copies to the DFRC Safety and Quality Assurance Office. Submittal of this report shall be early enough in the schedule to allow for timely and effective action as required.

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Operational Readiness Review Committee:

- A. Objectively review and assess the state of readiness of the operation, verifying that it has met the requirements of NASA and DFRC safety provisions, including proper establishment, definition, and implementation of the following:
- operational objectives
 - operational planning and methods
 - emergency/contingency planning
 - system safety (hazard analysis and risk assessment)

An Operational Readiness Review Checklist - (Attachment) may be used by concerned operational/support personnel and the ORR Committee to help determine that specific requirements have been considered and are properly complied with or are not applicable to the operation.

6. RESPONSIBILITIES AND PROCEDURES

The following actions generally apply to the performance Operational Readiness Reviews, although not necessarily in the order shown. Specific actions will vary according to the type, size, and complexity of the program or operation.

- A. Appointing Memorandum - The Center Director or representative shall appoint the Committee by means of a memorandum to concerned personnel which:
- a. Identifies the Committee members, Committee chair, and advisory or consultant personnel where applicable.
 - b. Identifies the program or operation concerned.
 - c. Identifies the purpose of the Committee and specific areas of concern or desired special effort.
 - d. May establish meeting places and times, and specific reporting requirements; however, these are normally established by the Committee chair.
- B. Committee Briefings - Required briefings shall be presented by qualified program or operation personnel to familiarize the Committee with the overall effort, and the specifics of all areas under evaluation.

It is the responsibility of program/operation personnel to assure that all information provided to the Committee is current, complete, and accurate. That all designs,

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documentation, or hardware submitted for evaluation is properly prepared and represents the actual configuration and functional characteristics intended for use; and that all known or suspected anomalies, deficiencies or discrepancies, and areas of concern or question are identified.

- C. Evaluations - The Committee shall evaluate the program or operation, including the design, construction, and performance of a program or operation.
- D. Committee Report - After completing all Committee actions to accomplish its appointed purpose, a report signed by all Committee members shall be submitted to the Center Director or representative. No specific report format is required. The Committee's determinations, recommendations, and conclusions shall be based on information acquired and evaluated as described in B and C above. The report shall include:

- a. A review of all chronological/historical Committee activity.
- b. Recommendations regarding the concerned program or operation, specifically including all areas of concern and proposed changes, restrictions, and limitations.
 1. Classification of Recommendations - The Panel is to classify each recommendation as "Mandatory" or "Non-Mandatory."

Mandatory - Recommendations involving a credible risk of accident or misoperation at the catastrophic or critical level.

Non-Mandatory - All other recommendations, including general safety upgrading, where the significant risk is minor damage to equipment or facility or brief interruption of operations, and immediate action is not required.

A one-third vote of the Panel is required to place a recommendation in the Mandatory category; however, all Panel members' dissents to actions failing to place recommendations in the Mandatory classification are to be noted in the Panel's reports. The Panel is to review the adopted recommendations with operating and test personnel to assure that they are understood and that the Panel has acted on the basis of accurate and complete information.

- c. Specific identification of all non-concurrences by any Committee member.

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- d. Supplements and attachments pertinent to the report.

Individual Committee members have the right of dissent with any action or recommendation of the overall Committee membership, and such dissent, if not subsequently resolved, shall be a matter of record on all pertinent documentation, including the Committee report.

The report shall be signed by the Chair and all members of the Committee before submitting it to the Center Director or representative. The signature of any member does not necessarily indicate agreement with all portions of the report, but does signify that the member has reviewed the report, that in the member's opinion it is complete and factual, and that the member's areas of disagreement or non-concurrence are properly presented.

7. SELECTION AND PERFORMANCE GUIDELINES

- A. Committee Membership - The members of the Committee are selected to represent the specific functions and disciplines necessary for objective review and assessment. Additionally, whenever practical, experience and expertise, which is broad in scope, is desirable to help recognize potential problems in a wide range of areas.
- B. Committee members, including the Chair, shall not be associated with the concerned program or operation in any manner such that their activities or recommendations may be influenced.
- C. Advisors/Consultants - In furthering the function of the Committee, the inputs and assistance of advisors and consultants shall be solicited and used as required. All international actions and decisions, however, remain the sole responsibility of the Committee.
- D. Program/Operation Personnel - During briefings and other Committee meetings, program or operation personnel may attend for requested inputs and assistance, but shall have no formal voice in any Committee action or decision.

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Attachment

NASA-DFRC OPERATIONAL READINESS REVIEW (ORR) CHECKLIST

The ORI Committee must ensure the following (as applicable) are adequate for safety and operation of the designated facility:

1. Facility, Support Services, and Equipment and Process Control.

- A. Facility design and construction.
 - a. Latest approved drawings from facility acceptance.
 - b. Specifications.
 - c. Material compatibility with fluids and environment.
 - d. Proper safety factors.
 - e. Other specifications as appropriate.
 - f. Schematics - fluids and wiring.
 - g. Deviations and approval records.
 - h. Delivered software and status.
 - i. Process for configuration and change control for the facility.
 - j. Adequacy of pre-operational inspection, quality control, and shakedown testing.
- B. Support services.
 - a. Ensure electrical power and other support services are adequate for safety.
 - b. Quality control.
 - c. Emergency systems.
- C. Equipment.
 - a. Drawings, specifications, schematics, changes, including deviations -with approvals.
 - b. Changes and change control.
 - c. Acceptability for use.
 - d. Calibration requirements and records.
- D. General operating procedures for the facility.

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2. Organization and Staffing.

- A. Proper organization and staffing for operations (NASA and contractor(s))
 - a. Size and organization.
 - b. Responsibilities of each test team member.
 - c. Proper level of training, experience, and certification for each test team member, including records.
- B. Clear definition of areas of responsibility for all organization elements involved in the requests for support and operation or tests, including those between the government and contractor elements.

3. Safety, Health, and Environmental Control.

- A. Safety.
 - a. Hazards analysis.
 - b. Necessity for an Initial Systems Test (IST), if not already completed, to verify that all hazards have been identified and either removed or controlled.
 - c. Compliance with OSHA and other federal, state, and local safety regulations.
 - d. Reliability analysis.
 - e. Failure mode and effects analysis.
 - f. Sneak circuit analysis.
 - g. Single-point failure summaries and critical items lists.
 - h. Requirements and procedures for all organizations operating in the facility.
- B. Health.
 - a. Human factors.
 - b. Industrial health.
- C. Environmental.
 - a. Adequacy of provisions to protect the environment.
 - b. Compliance with EPA and other federal, state, and local environmental protection regulations.

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4. Tests and Operations.

- A. Provisions to monitor and control the test, process, or operations in a safe mode.
- B. Plans and procedures for data management.
- C. Documented and controlled quality and safety provisions.
- D. Adequacy of provisions for control of the test article and process.
- E. Failure mode and effects analysis for the test article.
- F. Provisions for an integrated failure mode and effects analysis between the facility and the test article and process.
- G. Plans and procedures for tests or operations, including change control.
- H. Plans and procedures for emergency conditions, including assurance of communicating the requirements and situation status.
- I. Software certification and change control process for software.

5. Field Center Considerations.

Conformance with all applicable Field Center requirements.

6. Any other factors having a direct or indirect bearing on the safe operation of the facility, equipment, or processes or its ability to support critical program needs.